MITIGATION OF BUSINESS RISK EXPOSURE IN PUBLIC HIGHER EDUCATION FACILITIES MANAGEMENT USING KEY PERFORMANCE INDICATORS: ANALYSIS OF THE UNIVERSITY SYSTEM OF GEORGIA

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Table of Contents

List of Tables iv
List of Figures v
List of Symbols or Abbreviations vi
Summary vii
Chapter I – Introduction 1
Chapter II – Risk Within Facilities Management 3
Chapter III – Facilities Funding Variables & Potential Consequences 5
Chapter II – Historical Review 12
Chapter IV – Research Methodology 14
Chapter V – Research Results 20
Facility Operating Gross Square Footage (GSF) Index 20
Facility Operating Gross Institutional Expenditures (GIE) Index 22
Facility Operating Current Replacement Value (CRV) Index 23
Facilities Condition Index (FCI) 24
Capital Renewal Index (CRI) 25
Conclusion 27
Appendix 30
A. APPA Standards & Level of Care 30
B. APPA Facilities Performance Indicators (FPI) Report Results 32
C. USG FY 19 Facilities Management Survey Results 33
D. USG FY 19 Facilities General Component Costing 34
E. USG FY 19 Building Maintenance GSF Costing 35
F. USG FY 19 Custodial Services GSF Costing 36
G. USG FY 19 Utilities GSF Costing 37
H. USG FY 19 Grounds & Landscape Maintenance GSF Costing 38
I. USG FY 19 Major Repair & Rehabilitation (MRR) Budget 39
J. USG FY 19 Institutional Budget with Total Student Enrollment 40
K. USG FY 20 Current Replacement Values (CRV) 41
L. USG Institution's Approved FY 20 Capital Outlay 42
References 43

List of Tables

Table 1 IFMA M&O Geographical Costing 6
Table 2 APPA Level of Service Versus CRV Index 23
Table 3 APPA Level of Service Versus Facilities Condition Index 25

List of Figures

Figure 1 Building System Cost Comparison (DelPiano 2020) 7
Figure 2 Results Due to Deferred Maintenance (Federal Facilities Council 2001) 10
Figure 3 Capital Renewal Economic Sweet Spot (Grussing and Marrano 2007) 11
Figure 4 USG GSF By Institution & APPA Benchmark 21
Figure 5 USG GSF Index by Institution 21
Figure 6 USG Facilities Costing by Division with APPA Comparison 22
Figure 7 USG MRR Funding Analysis, FY99 - FY19 25

List of Symbols or Abbreviations

APPA	Association of Physical Plant Administrators
ACI	Asset Condition Index
B	Billion
BCI	Building Condition Index
BRE	Business Risk Exposure
BOR	University System of Georgia Board of Regents
CRI	Capital Renewal Index
CoF	Consequence of Failure
CSF	Cost Per Square Foot
CRV	Current Replacement Value
DOAS	Department of Administrative Services
FM	Facilities Management
FCI	Facilities Condition Index
FPI	Facilities Performance Indicators
GIE	Gross Institutional Expenditures
GSF	Gross Square Foot
IFMA	International Facility Management Association
ISO	International Organization for Standardization
KPI	Key Performance Indicators
LoF	Likelihood of Failure
NACUBO	National Association of College and University Business Officers
M	Million
MRR	Major Repair and Rehabilitation
PPV	Public Private Ventures
ROI	Return of Investment
RM	Risk Mitigation
SACS	Southern Association of Colleges and Schools
SQFT	Square Feet
USG	University System of Georgia
OREF	USG Office of Real Estate and Facilities

Summary

In the post-secondary education industry, physical buildings and infrastructure play a major role in the education curriculum and are often one of the largest and most expensive fixed assets. These assets are comprised of many complex systems and are usually funded by public dollars. Most educational facilities are built with longer life cycles to have the best Return of Investment (ROI). However, when maintenance measures and funding are not correctly appropriated, there is a large amount of risk or Business Risk Exposure (BRE).

Previous studies have evaluated the financial perspective of relationship to facility management within international educational institutions. These results were measured against a Facilities Performance Indicators (FPI) report made up of educational institutions across the United States volunteering current facility information. The report is created annually by the Association of Physical Plant Administrators (APPA), whose organizational mission is to support educational excellence with quality leadership and professional management through education, research, and recognition. This study will explore the Key Performance Indicators (KPIs) within the APPA FPI report to evaluate the University System of Georgia (USG) and the financial investment received by the facilities management program at the various institutions and associated risks. Results show that the capital investment of the examined institutions are sufficient. However, operational funding for general maintenance and repairs is significantly lower than institutional peers within the APPA report. The lower amount of operational funding can result in deferred maintenance resulting in higher level of business risk to the USG.

Chapter I – Introduction

Although facilities management is relatively a new industry, it has become a worldwide recognized industry since the late 80's (Geierman 2009). Most companies consider facilities management as a cost center hoping to reduce cost as much as possible in order to increase profitability (Maletič 2012). In the public education industry, institutions see themselves as non-profit building owners. The focus consists on transitioning from profitability to sustainability and reducing energy and maintenance cost, mitigating health and safety, while providing quality to its consumers being either the student, faculty or general public (Ganisen et al. 2015).

Throughout the last century there have been external factors such as World Wars, economic recessions or the introduction of financial aid, which caused an explosion of growth in the educational institutions igniting the need for campus building expansions (Kaiser 1984). However, the lack of maintenance funding and environmental conditions have caused major building deterioration of these expansions over the years (Lavy and Bilbo 2008). Organizations such as APPA, the National Association of College and University Business Officers (NACUBO), and the US Department of Education (USDOE) have always partnered to examine and understand the vast dilemma of failing assets and the cost to maintain and renew educational physical infrastructure.

In 1893, the US Education Bureau reported that there were 595 colleges and universities within the US, with a total enrollment of 110,545 students. By 1974, the National Center for Education Statistics reported that more than 2 billion square feet of academic space was in need of either remodeling or demolition. The US Department of Education reported that student enrollment in 2016 was 19 million with colleges and universities having $584 billion in expenses of educating students. With so many institutions and building assets needed to keep up with the educational demand, it is essential that educational facilities professionals understand the condition of their campus in order to determine the

appropriate short-term and long-term needs for funding (Lavy and Bilbo 2008). Organizations such as APPA and NACUBO have created metrics to help guide professionals to analyze appropriate funding levels for their institutions.

In order to examine facilities funding and its impact further, two objectives have been identified in this study:

1. Examine facilities operational funding of the USG institutions and compare the systemwide funding to its counterparts within the APPA FPI Report in order to understand if operational funding is adequate or below comparable institutions.

2. Explore capital investments within the USG institutions and compare the systemwide capital funding to its counterparts within the APPA FPI Report in order to understand if funding is adequate for capital renewal.

Chapter II – Risk Within Facilities Management

Facilities Management (FM) is determined as organizational functions that integrate people, places and processes within the built environment with the purpose of improving the quality of life of people and the productivity of the core business (ISO 41000). The United States Army defines risk as the probability and severity of loss linked to hazards. From a facilities management perspective, there are several ways to analyze risk as it relates to the productivity of the core business, but a commonly used method to analyze risk or business exposure as it relates to FM and facilities assets is by the following formula:

Business Risk Exposure = Likelihood of Failure x Consequence of Failure x Risk Mitigation or

BRE = LoF x CoF x RM

Entities such as the Army Corps of Engineers and various agencies who manage large or non-contiguous infrastructure use this formula to understand the ramifications of facilities decisions and how these decisions will affect their core business if an asset failed.

The variable LoF is described as the likelihood or the probability of a failure (Khan and Haddara 2003) (US Army 2014) and a failure is defined as an unsatisfactory condition (Nowlan and Heap 1978). Failure could be a variety of situations such as the construction project not meeting substantial completion within the contractual time or simply the the failure of a building's hot water heater recirculating pump. This variable is often used for businesses in efforts to understand the reliability of systems to manage profitability and public life safety (Zio 2007). This method of understanding the reliability of an asset or system to prevent failure is commonly referred to as reliability engineering or reliability-based management and is an industry within itself (Kiran 2017). Within engineering practices there are many avenues that can be taken to determine the reliability of an asset such as using fault tree analysis and mean time intervals to understand the root cause of and understand duration between the failure using

the Weibull Failure Distribution, Cumulative Distribution, or Poisson Distribution to analyze asset life cycles (Pham and Lai 2007).

The variable CoF is described as the consequence or severity of failure (Khan and Haddara 2003) (US Army 2014). The CoF parallels with the pillars of sustainability which is defined as the state of a global system, including environmental, social and economic aspects, in which the needs of the present are met without compromising the ability of future generations to meet their own needs (ISO 41011). When evaluating an asset or building system, the CoF will usually have an impact of loss in one or more of the following categories (Khan and Haddara 2003):

- System Performance Loss
- Financial/Economic Loss
- Environmental/Ecological Loss
- Human Health/Social Loss

The variable RM is described as risk mitigation (Army 2014). This variable remains a neutral constant until actual mitigation is performed against the risk. Risk mitigation can be as simple as completing a condition assessment to understand the useful life left in an asset or as extensive as installing redundant systems to ensure operational integrity.

Chapter III – Facilities Funding Variables & Potential Consequences

The conversation surrounding how much facilities operations, maintenance, and capital renewal costing has been widely discussed within the institutional financial community (NACUBO 2016). There are many factors that drive funding and life cycle costing that should be taken into consideration (Grussing and Marrano 2007):

- Geographical region
- Buildings and building systems design
- Age of facilities building
- Competency of facilities staff (Office & Field)
- Levels of service and required needs of the institution

The geographical area of an institution will affect funding from a variety of standpoints. Institutions in northern regions of the country may deal with unique variables such as snow removal and additional maintenance of building envelope to keep the institution operational due to cold climates, while southernly institutions may prioritize additional funding for pressure washing buildings due to mold and mildew or the replacement of mechanical controls due to humid conditions. Utilities and capital renewal funding may also be affected by regional diversity, instances such as extended runtimes of building cooling systems due to high sustained temperatures in a region, may cause higher wear on equipment internal parts, increased utility usage or a decreased system life expectancy.

Whereas a geographical region can cause variations in funding due to additional types of maintenance activities, geographical regions can also dictate contracted and in-house labor rates. While there can be a general cost difference for labor from a national perspective (i.e., New York to Georgia), costing can also vary from rural to urban perspectives as well. If an institution is located within a rural area,

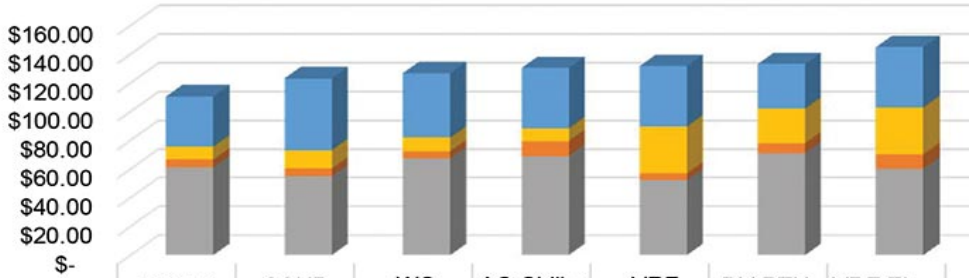
institutions may experience lower custodial and grounds labor rates due to a higher readily available pool of applicants. However, local talent for skilled trades such as heating, ventilation and air conditioning (HVAC) and electrical trades may not be readily available, and those positions may have higher than average labor rates. Outsourcing labor may be needed in a rural area, but qualified companies with needed insurance and credentials could be limited. Due the demand for qualified service providers, vendors may charge a premium for their services, whereas in a more urban setting there may be a plethora of qualified service vendors and pricing could be reduced more than the national average due to competitiveness.

Material costing can adversely affect the maintenance budget of institutions. Companies in general advertise pricing of materials with location as a variant in pricing. Factors such as shipping, or product availability can cause fluctuations of operational parts and supplies pricing on top of general modulation of pricing. The region will also affect the purchase of stock items, which will affect the budget depending on needed parts. Table 1 shows IFMA's 2017 Operational and Maintenance Benchmarking Report with fluctuation of maintenance costing due to the geographical region for reference. The report is generated from actual companies submitting surveys of actual cost given the geographical factor.

Table 1 IFMA M&O Geographical Costing

Region	CSF
Canada	$4.75
New England	$4.00
Northeast	$4.13
Mid Atlantic	$2.96
Southeast	$2.78
Midwest	$2.74
North Central	$2.97
Heartland	$2.85
South Central	$5.39
Mountain	$3.07
Pacific	$4.07

The design of a building or building's infrastructure can play a significant role in the operational funding of maintenance. Figure 1 provides an operation cost comparison of a building's cooling systems and capital renewal costing. Figure 1 shows that the installation pricing between a variable refrigerant flow (VRF) and air conditioner (AC) chiller air handling unit (AHU) system is basically the same however, the operational costing for maintenance and utilities is $22.58 per sqft variance between the systems. Other systems that were examined were water source heat pumps (WSHP), ground source heat pumps (GSHP), water cooled chillers (WC) with roof top units (RTU) and variable air volume (VAV) terminals, and direct expansion (DX) rooftop units (RTU). While there are various factors that are analyzed to select a cooling system such as, building size, geographical region, building use, inhouse skill set, construction budget or life cycle, it is still critical during the selection process to understand the operational budget ramifications.



	WSHP	GSHP	WC Chiller RTU VAV	AC Chiller AHU	VRF Middle	DX RTU VAV	VRF Elem Retrofit
Install $/SF	$35	$50	$45	$42	$42	$31	$42
Replacement Allocation	$8.89	$12.70	$9.42	$8.79	$32.72	$24.15	$32.72
30 Yr. Maint $/SF	$5.33	$5.33	$4.72	$10.35	$4.69	$6.81	$10.04
30 Yr. Energy $/SF	$61.34	$55.15	$67.75	$69.26	$52.34	$71.29	$60.28

Figure 1 Building System Cost Comparison (DelPiano 2020)

The selection of a building cooling system as indicated in Figure 1 not only shows the importance of appropriately selecting systems, but also of the institution's staffing being informed and creditable to make such a decision. Facilities administrative staff may not have the full understanding, capabilities, and tools needed to plan and provide sufficient life-cycle and operational costing and prioritization to senior leadership to decide comprehensive funding (Hamid, Alexander, Baldry 2016). The lack of appropriate staffing can cause significant increases in maintenance budgets due to the selection of building systems, prioritization of completing maintenance activities or even disorganization due to improper organization structure alignment. Field staff may provide poor quality of maintenance due to lack of skillsets, age or lack of departmental organization and structure causing an increase in funding to continue performing at the same level of proficiency (Deleryd 2011). Due to the lack of quality in maintenance activities performed, institutions may be forced to use outsourced vendors to perform the same activities that staff should preforming doubling maintenance costing.

The level of service is the standard at which an organization function (APPA 2012). In relationship to the facilities, it defines intensity of responsiveness at which the maintenance staff performs maintenance and serves the institution. The intensity of service provided will drastically define operational funding (Glazner 2011). The levels of service can dictate every aspect such as cleaning a restroom one or five times a week or as advance as answering all maintenance requests with in a 24-hour timeframe. The level of service prescribed to each maintenance activity will require additional staffing and material costs to meet the appropriate demand.

APPA has formulated five service levels that describe the intensity of facilities services and the overall appearance of the institution managed at the particular service level selected. The service levels describe services for the major facilities' operational functions, which are building maintenance, custodial services, and grounds maintenance. The top four APPA levels of service can be found in the appendix named A. APPA Standards & Level of Care. The fifth level of services describes the level of

institutional neglect and was not provided due to minimal use of the level. The level of service matrix does not only describe the responsiveness of the maintenance staff, but provides KPI correlational data on where an institution would typically fall on the comparable performance indicator scale if that service level was selected.

As buildings age, buildings and building systems deteriorate creating additional need for operational funding (Lavy and Bilbo 2008). Corrective maintenance activities for a particular asset can increase due to the deterioration of the aging building systems (Grussing and Marrano 2007). This asset condition can cause unplanned outages and breakdowns until major components are overhauled or replacements can be performed. However, the above-mentioned dynamics can cause strains on staffing and maintenance budgets (Alshehri 2016). This is due to the facilities department level of service not being prescribed to manage the additional level of maintenance attention needed to keep building system assets operational.

Providing essential services to the institution to ensure the optimal function of the institution is the core mission of the facilities department. Studies show that one of the major FM factors affecting an asset or building system's sustainability is caused by finances (Nesan and Teknologi 2015). Budget constraints or the lack thereof can cause an increased rate of failure and a delay in maintenance service due the spread of maintenance staff to cover responsibilities (Alshehri 2016). This delay in service is commonly known as deferred maintenance (IFMA).

In Figure 2, the curve shows a typical life cycle of an asset, which has been prescribed by the manufacturer or built with a particular life expectancy in mind when erected. The grey area in the graph shows the consequence of the required maintenance by the manufacturer that has reduced service life and has been deferred (Federal Facilities Council 2001). The effects of funding deficits will cause a lack of needed staff to perform the manufacturer recommended maintenance tasks or the lack of outsourcing

these tasks to perform maintenance (Alshehri 2016). Nevertheless, this lack of funding over time will cause an early capital asset renewal, which is usually unscheduled and causes the institution additional funding.

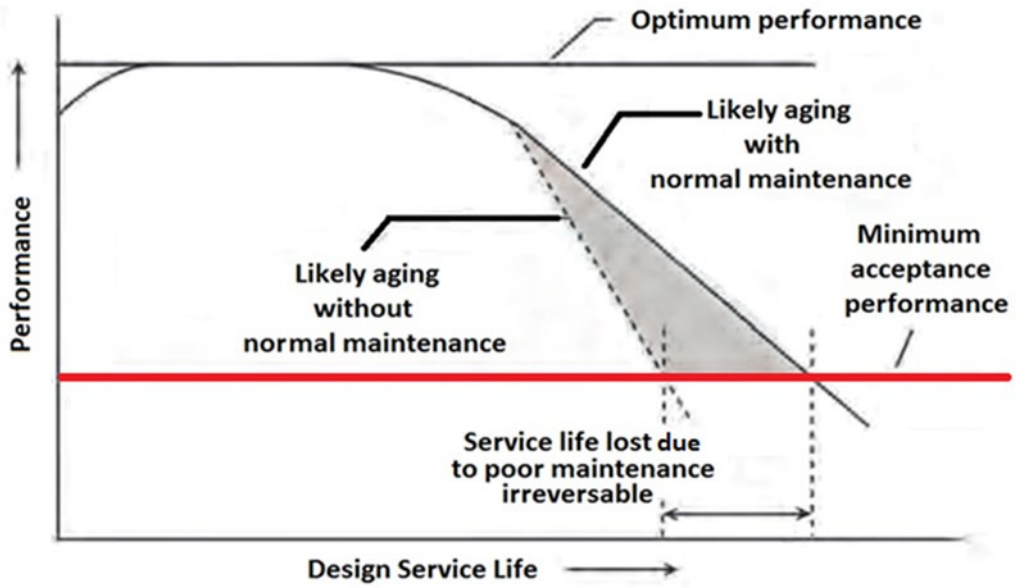


Figure 2 Results Due to Deferred Maintenance (Federal Facilities Council 2001)

If feasible, buildings and building assets would be replaced at a stage of failure. However, most assets are renewed through a process called “capital renewal” to extend the asset’s lifespan (Grussing and Marrano 2007). Capital renewal require large planned funding and should be scheduled within an appropriate timeframe. Studies suggest that if these asset renewals are not performed at the appropriate time, the renewal would not be worth the costing. If an institution renews too soon, then useful service of life is left unused, spending unnecessary funds. Conversely, if an institution renews assets too late, then the repairs will not add useful life to the asset and will result in major components of the equipment having degraded beyond repair (Grussing and Marrano 2007). The appropriate timing is considered the “Economic Sweet Spot” and is depicted in Figure 2.

Figure 2 shows a normal building or building asset and its condition at installation. The building asset incurs deterioration over time along with general maintenance procedures. Inspections are performed at random intervals to examine the assets condition. The inspections will determine the asset's condition and rate the operational reliability of the asset. This rating is called the Asset Condition Index (ACI) or Building Condition Index (BCI) (Grussing and Marrano 2007). Once the ACI/BCI meets a minimal level of operational reliability, a decision must be made for a capital renewal or to continue to operate this equipment till operational failure. The dotted line curve within Figure 2 shows the extended lifespan given to the asset due to a contribution of funding for capital renewal at the economic sweet spot.

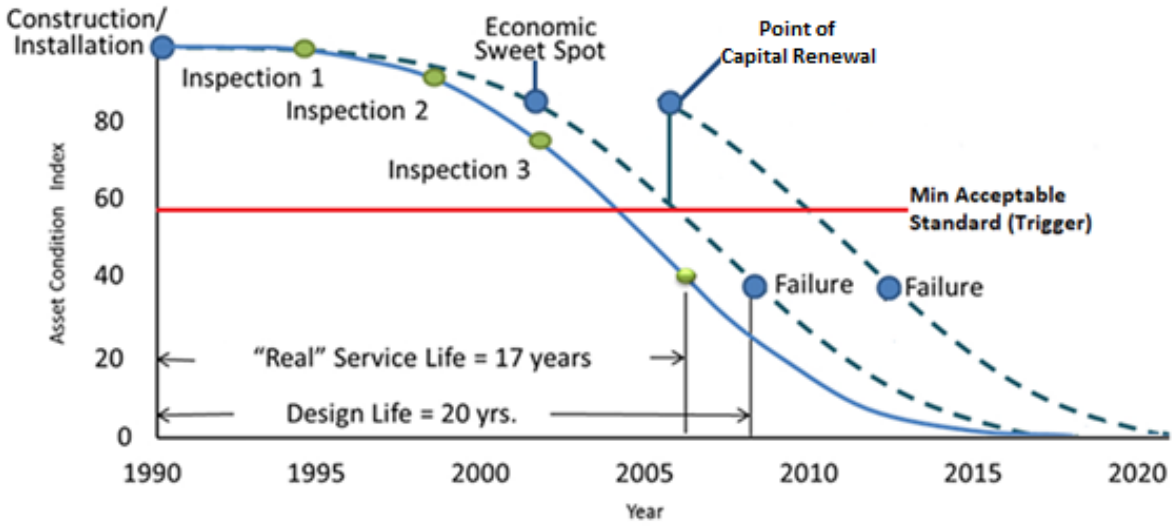


Figure 3 Capital Renewal Economic Sweet Spot (Grussing and Marrano 2007)

Chapter II – Historical Review

The University System of Georgia Board of Regents (BOR) is the governing body for all State of Georgia public higher education institutions. Currently there are 26 institutions under the BOR's authority with a budget of $702M in institutional campus operations in 2020 with an annual systemwide budget of $9.6B (BOR 2020 Budget). The BOR was created in 1931 from a State governmental reconstruction, primarily due to the Great Depression and ensuring the financial solvency of Georgia Universities and Colleges (BOR 1981). In which most of the financial woes were determined primarily due to each institution being its own entity, thus making the approval of the BOR governing authority overwhelming unanimous by the State legislature.

In 1931 the USG was comprised of 26 universities and upon the inauguration of the BOR, the board immediately consolidated institutions down to 18 with a total operating budget of $1.6 million and student enrollment of 8,000 (USG Readers Digest 2000). Today, the USG is comprised of over 108 million square feet with 3,880 buildings with a total operating budget of $9.6 billion encompassing $178 million in capital building projects. Since its inception the BOR has fluctuated institutions to as many as 35 institutions, with recent consolidations back to 26 institutions, with a student fulltime enrollment of 325,203.

In 1984 the State of Georgia implemented a USG funding formula to fund the USG through the State's appropriations. The funding is formulated by 3 variables: Semester Credit Hours; Building Square Footage; and Salary Fringe Benefits. The formula allocates close to 10% of the USG operating budget to the facilities department for appropriate maintenance. The intent of the formula was to minimize tuition making education affordable for every Georgia citizen. Originally the formula provided an institutional funding ratio of 75% State funded and 25% student tuition. Unfortunately, this formula was never fully realized, and tuition and other services make up to about 50% of the USG revenue, Under the funding

formula of 1984, the facilities 10% allocated amount would be close to $7.32 CSF however, that funding CSF has never been realized.

The State's financial funding is given to the USG as a lump sum from the State legislature. In turn, the BOR provides this funding to the individual institutions as a lump sum to be used at the institution's discretion. The formula does not consider inflation, loss of student enrollment which is a direct reduction in tuition and considerations of issues that derived after the funding was created, but not considered in the formula (BOR 2014). Due to the aforementioned factors, institution presidents and business officers must reduce funding where needed in order to balance budgets in the event of emergencies or loss of student enrollment. Due to the size of facilities budgets, facilities departments are usually one of the first considerations to reduce funding. The State's funding formula has progressively changed to a more graduation performance-based structure, which further strains facilities operations at institutions that may struggle with graduation rates due to low enrolled academic programs.

Chapter IV – Research Methodology

The financial performance analysis of the USG system is based on equations and parameters derived from a study evaluating financial key performance indicators in institutional facility management (Al-Tamimi & Mohammed 2010). The study uses indictors from APPA and the balanced scorecard, developed by R. S. Kaplan, to perform an analysis of 28 well known international institutional buildings and evaluates the facilities financial KPIs to determine the effectiveness of the facilities' financial posture in relations to building condition.

This research study uses matching KPI's from the 2010 study that are used to evaluate the USG from a system perspective. Results are compared against the Facilities Performance Indicators (FPI) report from 2018-2019 provided by APPA. The APPA FPI report was comprised of over 255 participants who shared their institutional data from their institutions within the United States and Canada. The 255 participants are made up of institutions that provide variety of services such as research, agricultural, liberal arts, two-year, and four-year to name a few variables. This variety depicts a similar variety within the USG.

Other studies, such as (Kaiser 1984) and (NACUBO 1998) have used the suggested KPI equations to validate the effectiveness of facilities funding and are considered industry standard equations. The KPI equations suggest the effectiveness of the USG funding, but does not suggest if funding is at an appropriate level, which has many various variables to determine the allocation. The used KPI equations are as followed:

1. Facility Operating Gross Square Foot (GSF) Index

   GSF Index = [Total Annual Maintenance Operating Expenditure]/[Gross Square Feet (GSF)]

2. Facility Operating Gross Institutional Expenditures (GIE) Index

   GIE Index = [Total Annual Maintenance Operating Expenditures]/[Gross Institutional Expenditures]

3. Facility Operating Current Replacement Value (CRV) Index

   CRV Index = [Annual Facility Maintenance Operating Expenditures]/[Current Replacement Value]

4. Facilities Condition Index (FCI)

   FCI = [Deferred Maintenance]/[Current Replacement Value]

5. Capital Renewal Index (CRI)

   CRI = [Annual Capital Renewal and Renovation Expenditure]/[Current Replacement Value]

The above-mentioned equations were formulated with the collected data obtained from the USG and the State of Georgia in the following manner:

First, in 2019 I performed a Facilities Management Survey as an employee of the USG as Director of Management and Operations. This survey was strategically sent out to all USG institutions for completion by institution's chief facilities officers. The surveys were submitted back to me as the USG central office representative for review. While the survey collected over 13 data sets, this study focused on the following data inputs from the survey:

Total Square Footage Maintained by Institutional' s Facilities Staff

Total Acreage Maintained by Institutional' s Facilities Staff

Total Annual Facilities and Maintenance budgets

The survey parameters focused only on State owned facilities square footage and did not include Public Private Ventures (PPV), which account for an estimated 30% of the USG building portfolio. This elimination of the PPV portfolio is primarily due to the PPV model not being supported by State funds.

The PPV model is revenue generating, therefore maintenance and operational strategies are theoretically prescribed within the feasibility proforma prior to construction of the project. This model allocates the correct funding to carry the building's maintenance for the life cycle of the building.

Second, data was also gathered from the State of Georgia's Consolidated Database of Real Property Assets (https://www.realpropertiesgeorgia.org/PublicHome/Index?ReturnUrl=%2f). Required by law, O.C.G.A. 50-16-35 (2010), all State departments including the USG institutions, submit and update State-owned properties to the database for an accurate account of real estate. The state of Georgia self-insures all State properties and by law, O.C.G.A. 50-16-9 (2010), the Department of Administrative Services (DOAS) is the managing department that administers the program. DOAS uses the State's property database to manage the insured values for USG institutions. While the general public can access the database and receive information on State owned buildings such as square footage and location, information on building replacement value is restricted to USG and DOAS designated employees. To gain the current replacement value, I received the database from the USG space planner, Maggie Dolan, which provided the unedited raw real estate database and included institution's building replacement cost along with insured values. I filtered this database and provided the compressed format in the appendix named K. USG FY 20 Current Replacement Values "CRV". This chart reflects each institution's reported square footage, replacement, insured, and insured content value for State owned facilities.

Third, USG maintenance expenditures were received and validated by the BOR budget office. USG Business Procedure Manual Policy 13.3 requires that institutions submit all financial expenditures through the integrated GeorgiaFIRST PeopleSoft system. This system allows the central office to track individual institution's spending. While the USG Facilities Survey provided the overall budgets that facilities departments managed, the USG budget office provided me with specific financial tracking of expenses for building maintenance, custodial services, utilities, and grounds maintenance. A chart

showing individual institution maintenance and operations expenditures for building maintenance, custodial services, and grounds is provided in the appendix in the following charts:

- D. USG FY 19 Facilities General Component Costing
- E. USG FY 19 Building Maintenance GSF Costing
- F. USG FY 19 Custodial Services GSF Costing
- G. USG FY 19 Utilities GSF Costing
- H. USG FY 19 Grounds & Landscape Maintenance GSF Costing

Fourth, the USG budget office also provides an annual summary of institution's budgets on their website to the general public for transparency (https://www.usg.edu/fiscal_affairs/functions/budgeting/), while the student fulltime enrollment was also provided by the USG central office of academic affairs on their website for transparency (https://www.usg.edu/research/enrollment_reports/). A chart showing per institution student enrollment with institutional allocated budget and per student expenditures is provided in the appendix named J. USG FY 19 Institutional Budget with Total Student Enrollment. Please note that institutional fiscal years cross calendar years. Therefore, the USG fiscal year 2019 consist of 2018 fall semester data through 2019 summer semester, which this chart reflects Fall 2018 student enrollment data.

Fifth, the USG and State of Georgia Governor's Office annually post the approved USG Capital Outlay Plan (https://www.usg.edu/facilities/capital_budget_requests). This plan provides the public with the approved capital projects that the USG has been allocated funds to complete. The capital outlay plan includes new construction and the capital maintenance funding, which is called the Major Repair and Rehabilitation (MRR) fund (https://www.usg.edu/facilities/resources/mrr_projects). MRR program is a capital renewal program for state owned facilities within the USG. The program is designed to help

maintain USG institutional facilities and infrastructure. This program was developed by the State of Georgia and the BOR to address the needs of the state's rapidly expanding, aging, and highly used facilities. The program is administered by the USG Office of Real Estate and Facilities "OREF". Each year the individual institutions submit their list of projects to the OREF for approval. Each institution is awarded a percentage of the MRR allocation by a prescribed formula created by the OREF. Currently there is no mandate set by the USG to calculate or track the amount of deferred maintenance within an USG institution. Some institutions seek professional consultants to analyze various buildings within their portfolio and provide a condition assessment to determine the deferred maintenance and the capital renewal funding needed. While others perform self-assessments or educated assumptions of needed capital renewal. The best-known understanding of the system's total deferred maintenance at systemwide level is the MRR program, which provides a robust list of needed infrastructure replacements, overhauls, and renovations within the institutions.

Lastly, this study excludes information from the research institutions of the USG. Although these institutions exude a large quantity of the system's funding and maintained square footage, the data from all funding sources cannot be validated. Although the USG mandates the use of the integrated GeorgiaFIRST PeopleSoft system, it provides exclusive exceptions to the research institutions, which allows the option to participate in integrated GeorgiaFIRST PeopleSoft system. While the research institutions are mandated to have advanced financial systems with the ability to track all budgets and expenditures, these accounting systems are not synced to the USG central office for monitoring. Therefore, the data provided to the central office cannot be validated unless central staff is provided full access into the system. As a form of checks and balance, the central office is provided an annual submission of the research institutions budgets per policy and each research institution is audited by the USG internal audits department and the State's auditing department to validate accounting however, this audit is not readily available and provided unless requested by open records.

While this study excludes the USG research institutions, the APPA FPI reports still includes these types of institutions within the FPI results, which may provide deviations when comparing and contrasting data. However, this deviation is believed to be minimal effect to comparing the results. The USG research institutions, quantity of 4 out of 26 (15%), are classified as Doctoral/Research and Specialized Medical institutions from the FPI report. Out of the 255 participants there were 13 Doctoral/Research and 6 Specialized Medical institutions, which accounts for 7% of the participants.

Chapter V – Research Results

Facility Operating Gross Square Footage (GSF) Index

The USG survey shows that the USG institutions facilities staff maintained 38,341,442 SQFT of the USG building assets in FY 19. While the total USG institutional portfolio square footage was 108M SQFT, the difference in square footage represents the research institutions and PPV portfolio, which was excluded within this study. However, the State's Consolidated Database shows that the USG has 31,971,446 SQFT within the USG portfolio. This 6.4 M SQFT or 16% difference is considered a discrepancy. The reason for the discrepancy is unknown however, issues such as scrivener's error or the lack of updating the list due to property demolition or sale is believed to be the primary justification.

The USG financials show that in FY 19 the USG institutions spent $151,083,934 in facilities maintenance operations.

Facility Operating Gross Square Foot (GSF) Index

GSF Index = [Total Annual Maintenance Operating Expenditure] / [Gross Square Feet (GSF)]

GSF Index = [$151,083,934] / [38,341,442 SQFT]

GSF Index = $3.94

The USG GSF Index is below the APPA's GSF Index of $5.68. One critical factor within the APPA index resides within the utility costing. USG pays $0.91 less in energy cost from the APPA participants, which should be a cost saving. This is primarily due to geographical region. If the APPA GSF Index was adjusted to match the regional USG utility cost, the USG would still fall below the APPA GSF Index by $0.83. Figures 4 and 5 shows the GSF Index by USG institution and where they fall in relationship to the APPA's adjusted GSF of $4.77. Noting that only 4 out of 22 institutions are above the APPA adjusted average and the 7% or research institutions are included within the APPA calculation.

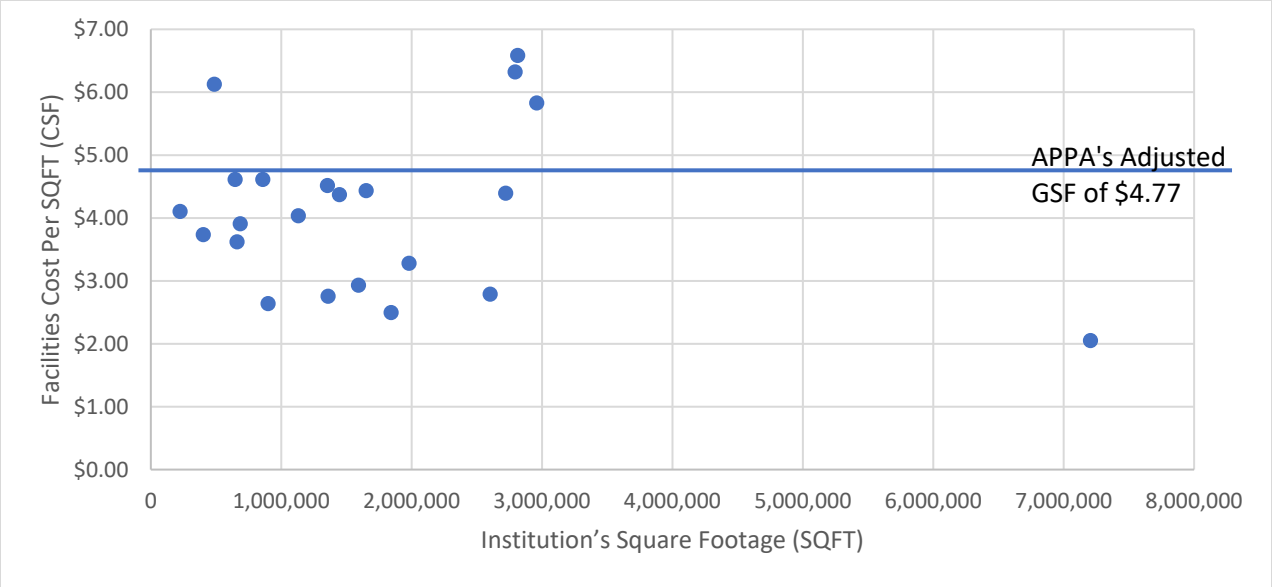


Figure 4 USG GSF By Institution & APPA Benchmark

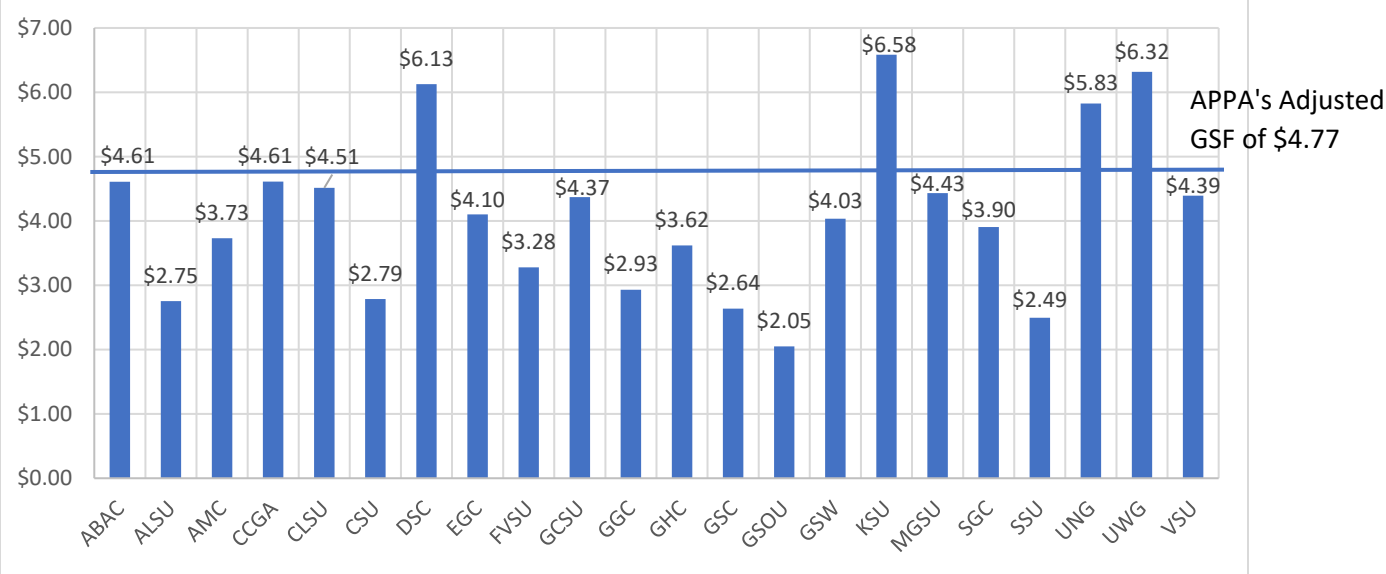
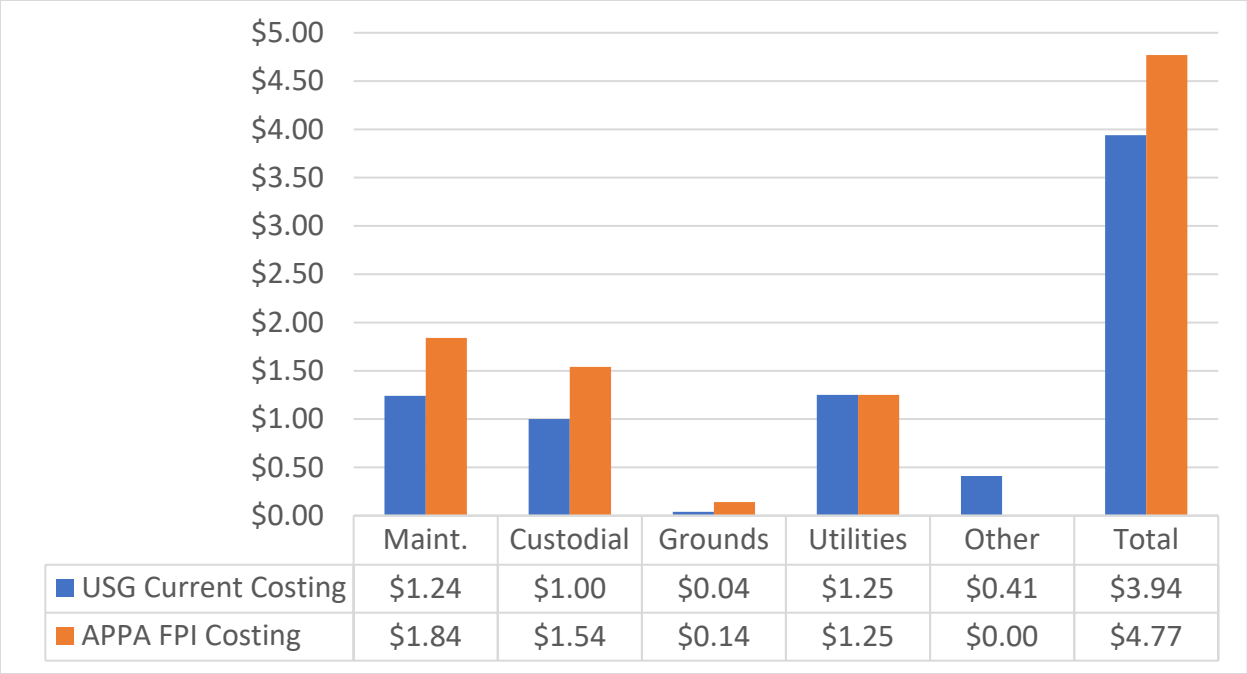


Figure 5 USG GSF Index by Institution

Figure 6 provides comparison charting of the GSF index between APPA and the USG by category. The chart shows how the USG lags behind in the individual categories described in the APPA FPI report. The "other" category depicts additional funding in the USG GSF Index, which cannot be identified in relation to the APPA categories.



	Maint.	Custodial	Grounds	Utilities	Other	Total
USG Current Costing	$1.24	$1.00	$0.04	$1.25	$0.41	$3.94
APPA FPI Costing	$1.84	$1.54	$0.14	$1.25	$0.00	$4.77

Figure 6 USG Facilities Costing by Division with APPA Comparison

Facility Operating Gross Institutional Expenditures (GIE) Index

The Facility Operating Gross Institutional Expenditures (GIE) Index illustrates the percentage of institutional funding that has been dedicated to the facilities management function. The 2009 APPA FPI report shows that the participating institutions spend an average of 5.8% of institutional funds toward the facility maintenance efforts. Using the USG annual fiscal year 2019 budget, the USG spends 5% on facilities maintenance endeavors, which is slightly below the APPA FPI average.

Facility Operating Gross Institutional Expenditures (GIE) Index

GIE Index = [Total Annual Maintenance Operating Expenditures] / [Gross Institutional Expenditures]

GIE Index = [$151,083,934] / [$3,071,297,726]

GIE Index = 0.049 or 4.9% or 5%

Facility Operating Current Replacement Value (CRV) Index

The Current Replacement Value (CRV) Index shows the contribution of funding to the maintenance program as it relates to the building value. It is a depiction of the maintenance care that may be given for the upkeep of assets. According to the known replacement value, the USG falls at a percentage of 2.5%. Table 2 shows the CRV portion of the APPA matrix, located within the appendix A. APPA Standards & Level of Care., showing the CRV scale and its correlation to the level of service. Using the APPA level of service matrix, this percentage suggest that given the financial resources within the USG, facilities maintenance activities are funded at a reactive management posture versus a more pro-active stance which is geared to more preventative and predictive maintenance. Previous studies suggest that due to the CRV percentage classified as reactive maintenance posture, there is an increase in cost to maintenance due to the current condition of the assets and the quality the of maintenance being performed (Salonen and Deleryd 2011).

Facility Operating Current Replacement Value (CRV) Index

CRV Index = [Annual Facility Maintenance Operating Expenditures] / [Current Replacement Value]

CRV Index = [$151,083,934] / [$5,916,961,656]

CRV Index = 0.0255 or 2.5%

Table 2 APPA Level of Service Versus CRV Index

Desired Level of Service	1- Showpiece Facility	2 - Comprehensive Stewardship	3 - Managed Care	4 - Reactive Management
Operating Budget as % of CRV	> 4.0	3.5 - 4.0	3.0 - 3.5	2.5 - 3.0

Facilities Condition Index (FCI)

The Facilities Condition Index (FCI) is a percentage that demonstrates the current condition of an asset given the amount of deferred maintenance and useful life remaining. The APPA FPI report shows the average FCI for participating institutions to be 12.34%, which is fair condition by APPA and national standards (Waheeda and Zilan 2018). The USG FCI was determined by the MRR program annual submissions, which focuses primarily on state owned facilities. The MRR program also has particular exclusions for use however, it is the only true depiction that is available to determine the USG deferred maintenance. In fiscal year 2019 the USG analyzed institutions requested $151,083,934 in deferred maintenance projects through the MRR program. This equates to an FCI of 1.76%, which would suggest that USG assets are in exceptional condition.

Facilities Condition Index (FCI)

FCI = [Deferred Maintenance]/[Current Replacement Value]

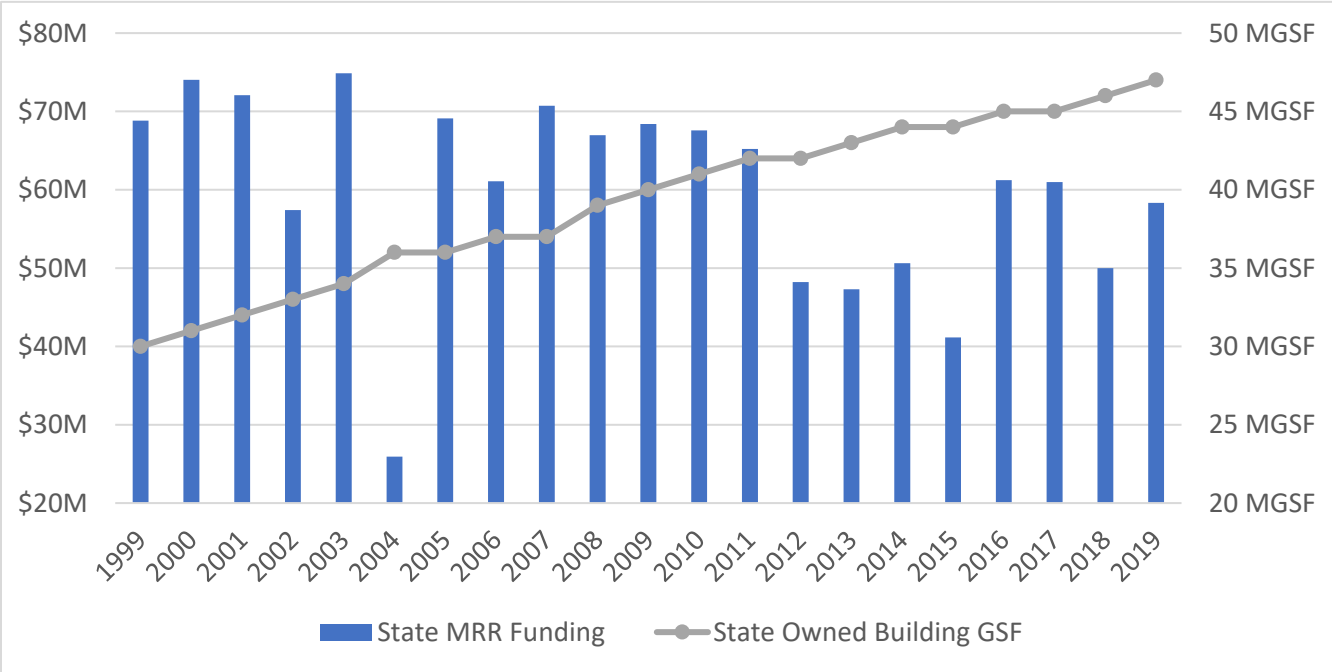
FCI = [$151,083,934] / [$5,916,961,656]

FCI = 0.0176 or 1.76%

Table 3 shows the FCI portion of the APPA matrix, located within the appendix A. APPA Standards & Level of Care, showing the FCI scale and its correlation to the level of service. The USG FCI is rated at the showpiece facility level. This percentage suggests that at this level of funding and condition assessment there is little to no deferred maintenance present at the institutions. Figure 7 provided a historic snapshot of capital renewal that has been invested within the USG for the last 20 years. While some years are funded at a lower level funding of the MRR is consistent and the USG building portfolio has steadily increased since 1999. Figure 9 shows that the State of Georgia has invested of $1 Billion to manage deferred maintenance. While futre and present dat calculations were not preformed however,

with the cost of inflation, fluctuation of the market for construction and parts, this billion dollar evaluation far exceeds the the $1 billion mark.

Table 3 APPA Level of Service Versus Facilities Condition Index



Desired Level of Service	1- Showpiece Facility	2 - Comprehensive Stewardship	3 - Managed Care	4 - Reactive Management
Campus AVG FCI	< 0.05	0.06 – 0.15	0.15 – 0.29	0.30 – 0.50

Figure 7 USG MRR Funding Analysis, FY99 - FY19

Capital Renewal Index (CRI)

The Capital Renewal Index (CRI) demonstrates the financial investment the company is willing to put back into its assets for appropriate refurbishment. According to the USG Capital Outlay, the USG was approved to spend $147,585,000 in capital renewal for the institutions within this study in fiscal year 2020. This number includes the MRR program of $21,185,000. The outlay shows that the USG CRI is

2.5%, which the APPA FPI suggest that an institution should spend anywhere from 1.9% to 2.9% for investments.

Capital Renewal Index (CRI)

CRI = [Annual Capital Renewal and Renovation Expenditure]/[Current Replacement Value]

CRI = [$147,585,000] / [$3,071,297,726]

CRI = .0249 or 2.5%

Conclusion

While the KPIs within this study are considered industry standards, there has never been a formal study or report that examined the USG within this capacity. The OREF department has always focused on new capital projects and private public ventures however, the department has never focused on the operational effectiveness of facilities maintenance on a system level. The question of maintenance was once raised by the BOR long ago and a standard was generated, but never authorized or put into action. Only within the last 12-13 years did the director of management and operations position emerge to understand the maintenance and operations at the campus and systemwide level. Unfortunately, traction with this position has never been fully realized due to employee retention and the USG professional courtesy that provides each institution good faith that the individual institutions are performing the appropriate level of maintenance and that the KPIs are examined and considered at an institution level.

The results herein demonstrate that capital renewal invested into the USG by the State of Georgia appears to be sufficient and the capital funding to the USG institutions seems to align with the average educational community within the APPA FPI report. This finding would suggest that the risk involved with capital renewal is minimal, seeing that institutions have consistent and annual funding available allowing them to take advantage of the economic sweet spot to extend the useful life of the buildings and its infrastructure. However, this FCI is inconclusive, because there are no additional mechanisms beyond the MRR program to bring deferred maintenance to the attention of the BOR and to fully calculate the USG's overall deferred maintenance.

While the MRR program is beneficial, it still has limitations to funding allocations and has exclusions to campus assets such as Parking Lots/Decks, Residence Halls, Athletic Venues, and Auxiliary Enterprise space, which are a mix of state-owned properties and PPVs. Only a small minority of institutions have performed professional condition assessments to capture the full extent of deferred maintenance and

useful life of equipment in order to prioritize and assess immediate replacements. Many institutions have only performed self-evaluation, which may or may not provide value due to staff qualifications.

As institutional buildings age, it is harder for buildings and building infrastructure to meet the current educational needs. Therefore, aging buildings must be preserved with the appropriate maintenance and refurbishments to keep up with the educational environment. Due to the scarcity of funds, building maintenance activities often compete with other academic programs and initiatives, which repeatedly prevail over maintenance. However, the built environment is essential to the learning environment.

The KPIs suggest that the USG annual facilities operating budgets appear to lag below the APPA FPI community. Although institutions are awarded funding as a lump sum to disperse as desired, adequate funding to support the operational efforts may not be realized and appear to be below the APPA FPI survey's average. Given the APPA level of service matrix, the KPIs would advocate that many USG FM departments may function at a corrective /reactive maintenance posture and deferred maintenance repairs may be slightly higher than average. As deferred maintenance increases and services become more strained due to the demand, institutions may struggle to meet the institutional maintenance response time and customer satisfaction, while outages or breakdown occur. As indicated earlier, the KPIs only suggest and provide indications of a potential dynamic and do not reflect the actual maintenance performance. Many factors such as quality of labor, geographical region, and complexity of systems, which have been previous discussed, can attribute to operating at a lower funding but performing above average service.

I believe that one of the major challenges within the USG is the education of facilities management and educating the institutional leaders of its importance. Many leaders at the institution come from non-technical backgrounds and may find critical to understand the importance of increasing funding to reduce deferred maintenance when all systems are working and there are other budget constraints

around the institution. Also, many facilities leadership within the USG are not post-secondary trained and cannot find the appropriate transfer of terminology to successfully gain the support of leadership.

The exploration of understanding about what institutional leaders think and what they are concerned with is a great topic to explore and provide a better understanding on how to relate facilities management information to leadership in a meaningful way. The exploration to validate the funding and building square footage of the research universities or on the USG PPV portfolio are other topics that should be a valuable tool to gain further insights on appropriate USG facilities funding. PPVs and research institutions make up over 60% of the USG building portfolio and while PPVs are mandated to perform condition assessments, the results from a system level could be informative. Future research could also be performed to evaluate the appropriate funding needed to provide quality maintenance service given the factors that affect funding and understand if the current levels of maintenance service and staffing are adequate.

Appendix

A. APPA Standards & Level of Care

Desired Level of Service	1- Showpiece Facility	2 - Comprehensive Stewardship	3 - Managed Care	4 - Reactive Management
Customer Service & Response Time	Able to respond to virtually any service; immediate response.	Response to most service needs, typically in a week.	Services available only by reducing maintenance; response times of one month or less.	Services available only by reducing maintenance; response times of one year or less.
Customer Satisfaction	Proud of facilities. High level of trust for facilities organization	Satisfied with facilities related services; usually complimentary of staff	Basic level of care. Able to perform mission duties. Lack of pride in physical environment	Generally critical of cost, responsiveness, and quality of facilities services
PM vs. CM	**100%**	**75 to 100%**	**50 to 75%**	**25 to 50%**
Maintenance Mix	All PM is scheduled and performed on time. Emergencies (e.g. power outages) are infrequent and handled efficiently.	A well-developed PM program; PM done less than defined schedule. Occasional emergencies caused by equipment failures, etc.	Reactive maintenance high due to systems failing. High number of emergencies causes reports to upper management	Worn-out systems require staff to be scheduled to react to failure. PM work consists of simple tasks done inconsistently
Aesthetics, Interior	Like new finishes	Clean, crisp finishes	Average finishes	Dingy finishes
Aesthetics, Exterior	Windows, doors, trim, exterior walls are like new	Watertight, good clean appearance of exterior	Minor leaks and blemishes; average exterior appearance	Somewhat drafty and leaky, rough-looking exterior
Aesthetics/Lighting	Bright and clean, attractive lighting	Bright and clean attractive lighting	Small percentage of lights out; well-lit and clean	Numerous lights out; missing diffusers; secondary areas dark
Service Efficiency	Maintenance activities appear highly organized and focused. Service and maintenance calls are responded to immediately	Maintenance activities appear organized with direction. Service and maintenance calls are responded to in a timely manner	Maintenance activities appear to be somewhat organized but remain people dependent. Service and maintenance calls are sporadic w/out apparent cause	Maintenance activities are somewhat chaotic and people dependent. Service and maintenance calls are typically not responded to in a timely manner

Desired Level of Service	1- Showpiece Facility	2 - Comprehensive Stewardship	3 - Managed Care	4 - Reactive Management
Building Systems' Reliability	Breakdown maintenance rare; limited to vandalism and abuse repairs	Breakdown maintenance limited to system components short of MTBF	Building and systems components periodically or often fail	Systems unreliable. Constant need for repair. Backlog repair exceeds resources
Operating Budget as % of CRV	**> 4.0**	**3.5 – 4.0**	**3.0 – 3.5**	**2.5 – 3.0**
Campus Average FCI	**< 0.05**	**0.06 – 0.15**	**0.15 – 0.29**	**0.30 – 0.50**

B. APPA Facilities Performance Indicators (FPI) Report Results

APPA Survey Results	2018	2019
# of Participants	254	255
GSF Maintained	3,405,391	3,234,820
CRV	1,369,835,580	1,656,329,842
CRV per GSF	390.88	431.69
Facilities Exp/GIE	5.43%	5.80%
Custodial Cost per GSF	$1.56	$1.54
GSF per Custodial	35,967	36,629
Grounds cost per acre	$5,552.86	$6,081.79
Acres per Grounds FTE	18.16	18.09
Maintenance Cost per GSF	$1.39	$1.84
GSF per maintenance FTE	79,838	79,523
Energy cost per GSF	$2.19	$2.16
BTU per GSF	97,818.97	122,540.41
Average Age of Buildings	34.85	34.49
Useful Life of MCB	47.04	55.29
Building Age Ratio	62.26%	61.26%
Total Cost of Ownership	22.84	22.98
FCI	12.89%	12.34%
Needs Index	20.25%	20.76%
Minimum Investment	2.00%	1.96%
Actual Investment	2.20%	2.90%
Customer Rating	4.524	4.568
Employee Rating	4.200	4.248
Training/work hours	2.16%	1.46%
% Internal Candidates	22%	31%

C. USG FY 19 Facilities Management Survey Results

Institution	Maintain Square Footage	O&M Budget	CSF
Abraham Baldwin Agricultural College	859,460	$ 3,962,032	$ 4.61
Albany State University	1,359,973	$ 3,746,232	$ 2.75
Atlanta Metropolitan State College	403,000	$ 1,504,000	$ 3.73
Augusta University	Excluded		
Clayton State University	647,632	$ 2,986,625	$ 4.61
College of Coastal Georgia	1,355,889	$ 6,120,446	$ 4.51
Columbus State University	2,603,441	$ 7,253,022	$ 2.79
Dalton State College	487,568	$ 2,986,625	$ 6.13
East Georgia State College	225,594	$ 925,630	$ 4.10
Fort Valley State University	1,981,341	$ 6,496,091	$ 3.28
Georgia College and State University	1,447,721	$ 6,325,837	$ 4.37
Georgia Gwinnett College	1,593,429	$ 4,668,288	$ 2.93
Georgia Highlands College	661,874	$ 2,395,258	$ 3.62
Georgia Institute of Technology	Excluded		
Georgia Southern University	900,490	$ 2,374,707	$ 2.64
Georgia Southwestern State University	7,205,968	$ 14,770,489	$ 2.05
Georgia State University	Excluded		
Gordon State College	1,132,721	$ 4,570,000	$ 4.03
Kennesaw State University	2,814,780	$ 18,529,910	$ 6.58
Middle Georgia State University	1,652,209	$ 7,324,856	$ 4.43
Savannah State University	687,166	$ 2,683,320	$ 3.90
South Georgia State College	1,844,300	$ 4,600,000	$ 2.49
University of Georgia	Excluded		
University of North Georgia	2,959,923	$ 17,243,217	$ 5.83
University of West Georgia	2,794,727	$ 17,660,178	$ 6.32
Valdosta State University	2,722,236	$ 11,957,171	$ 4.39
System Total	**38,341,442**	**$ 151,083,934**	**$ 3.94**

D. USG FY 19 Facilities General Component Costing

Institution	Maintain Square Footage	Maintain Acreage	Building Maintenance	Custodial Service	Utilities	Landscape Grounds Maintenance	Institution Total
Abraham Baldwin Agricultural College	859,460	590	$ 3,933,221		$ 1,112,200		**$ 5,045,421**
Albany State University	1,359,973	417	$ 1,030,969	$ 936,192	$ 750,000	$ 821,857	**$ 3,539,018**
Atlanta Metropolitan State College	403,000	67	$ 433,512	$ 514,914	$ 665,020	$ 62,000	**$ 1,675,446**
Augusta University	Excluded						
Clayton State University	647,632	268	$ 1,001,844	$ 1,575,953	$ 1,634,538	$ 688,104	**$ 4,900,439**
College of Coastal Georgia	1,355,889	216	$ 695,338	$ 709,504	$ 775,000	$ 531,291	**$ 2,711,133**
Columbus State University	2,603,441	158	$ 2,057,182	$ 721,868	$ 3,218,551	$ 1,655,198	**$ 9,652,799**
Dalton State College	487,568	144	$ 1,208,286	$ 566,813	$ 903,704	$ 138,000	**$ 2,816,803**
East Georgia State College	225,594	100	$ 270,521	$ 319,336	$ 654,930	$ 180,368	**$ 1,425,155**
Fort Valley State University	1,981,341	1,365	$ 1,452,852	$ 1,008,124	$ 1,985,000	$ 328,259	**$ 4,774,235**
Georgia College and State University	1,447,721	207	$ 4,348,358	$ 2,156,608	$ 1,948,329	$ 1,283,707	**$ 9,737,002**
Georgia Gwinnett College	1,593,429	215	$ 2,060,792	$ 750,744	$ 1,750,000	$ 339,362	**$ 4,900,898**
Georgia Highlands College	661,874	439	$ 1,058,124	$ 521,380	$ 1,357,382	$ 350,955	**$ 3,287,841**
Georgia Institute of Technology	Excluded						
Georgia Southern University	7,205,968	1,200	$ 9,192,010	$ 8,780,497	$ 8,321,337	$ 1,473,289	**$27,767,133**
Georgia Southwestern State University	900,490	236	$ 1,038,935	$ 485,450	$ 1,211,800	$ 467,258	**$ 3,203,443**
Georgia State University	Excluded						
Gordon State College	1,132,721	162	$ 810,216	$ 548,712	$ 1,000,000	$ 339,126	**$ 2,698,054**
Kennesaw State University	2,814,780	401	$ 4,594,135	$ 4,563,323	$ 6,992,678	$ 1,501,089	**$17,651,225**
Middle Georgia State University	1,652,209	744	$ 2,136,356	$ 1,060,574	$ 2,645,280	$ 859,940	**$ 6,702,150**
Savannah State University	687,166	340	$ 1,004,719	$ 1,399,143	$ 562,630	$ 446,762	**$ 3,413,254**
South Georgia State College	1,844,300	214	$ 552,453	$ 519,507	$ 887,150	$ 272,262	**$ 2,231,372**
University of Georgia	Excluded						
University of North Georgia	2,959,923	1,039	$ 3,441,312	$ 3,522,305	$ 3,291,943	$ 1,384,387	**$11,639,947**
University of West Georgia	2,794,727	673	$ 2,503,616	$ 3,033,990	$ 2,187,661	$ 1,813,042	**$ 9,538,309**
Valdosta State University	2,722,236	405	$ 2,771,156	$ 2,589,882	$ 4,163,320	$ 777,674	**$ 10,302,032**
System Totals	**38,341,442**	**9,600**	**$47,595,907**	**$38,284,819**	**$48,018,453**	**$15,713,930**	**$149,613,109**

E. USG FY 19 Building Maintenance GSF Costing

Institution	Maintain Square Footage	Building Maintenance	Building Maintenance CSF
Abraham Baldwin Agricultural College	859,460	$ 3,933,221	$ 4.58
Albany State University	1,359,973	$ 1,030,969	$ 0.76
Atlanta Metropolitan State College	403,000	$ 433,512	$ 1.08
Augusta University	Excluded		
Clayton State University	647,632	$ 1,001,844	$ 1.55
College of Coastal Georgia	1,355,889	$ 695,338	$ 0.51
Columbus State University	2,603,441	$ 2,057,182	$ 0.79
Dalton State College	487,568	$ 1,208,286	$ 2.48
East Georgia State College	225,594	$ 270,521	$ 1.20
Fort Valley State University	1,981,341	$ 1,452,852	$ 0.73
Georgia College and State University	1,447,721	$ 4,348,358	$ 3.00
Georgia Gwinnett College	1,593,429	$ 2,060,792	$ 1.29
Georgia Highlands College	661,874	$ 1,058,124	$ 1.60
Georgia Institute of Technology	Excluded		
Georgia Southern University	7,205,968	$ 9,192,010	$ 1.28
Georgia Southwestern State University	900,490	$ 1,038,935	$ 1.15
Georgia State University	Excluded		
Gordon State College	1,132,721	$ 810,216	$ 0.72
Kennesaw State University	2,814,780	$ 4,594,135	$ 1.63
Middle Georgia State University	1,652,209	$ 2,136,356	$ 1.29
Savannah State University	687,166	$ 1,004,719	$ 1.46
South Georgia State College	1,844,300	$ 552,453	$ 0.30
University of Georgia	Excluded		
University of North Georgia	2,959,923	$ 3,441,312	$ 1.16
University of West Georgia	2,794,727	$ 2,503,616	$ 0.90
Valdosta State University	2,722,236	$ 2,771,156	$ 1.02
System Totals	**38,341,442**	**$47,595,907**	**$ 1.24**

F. USG FY 19 Custodial Services GSF Costing

Institution	Maintain Square Footage	Custodial Service	Custodial Service CSF
Abraham Baldwin Agricultural College	859,460		$ -
Albany State University	1,359,973	$ 936,192	$ 0.69
Atlanta Metropolitan State College	403,000	$ 514,914	$ 1.28
Augusta University	Excluded		
Clayton State University	647,632	$ 1,575,953	$ 2.43
College of Coastal Georgia	1,355,889	$ 709,504	$ 0.52
Columbus State University	2,603,441	$ 2,721,868	$ 1.05
Dalton State College	487,568	$ 566,813	$ 1.16
East Georgia State College	225,594	$ 319,336	$ 1.42
Fort Valley State University	1,981,341	$ 1,008,124	$ 0.51
Georgia College and State University	1,447,721	$ 2,156,608	$ 1.49
Georgia Gwinnett College	1,593,429	$ 750,744	$ 0.47
Georgia Highlands College	661,874	$ 521,380	$ 0.79
Georgia Institute of Technology	Excluded		
Georgia Southern University	7,205,968	$ 8,780,497	$ 1.22
Georgia Southwestern State University	900,490	$ 485,450	$ 0.54
Georgia State University	Excluded		
Gordon State College	1,132,721	$ 548,712	$ 0.48
Kennesaw State University	2,814,780	$ 4,563,323	$ 1.62
Middle Georgia State University	1,652,209	$ 1,060,574	$ 0.64
Savannah State University	687,166	$ 1,399,143	$ 2.04
South Georgia State College	1,844,300	$ 519,507	$ 0.28
University of Georgia	Excluded		
University of North Georgia	2,959,923	$ 3,522,305	$ 1.19
University of West Georgia	2,794,727	$ 3,033,990	$ 1.09
Valdosta State University	2,722,236	$ 2,589,882	$ 0.95
System Totals	**38,341,442**	**$38,284,819**	**$ 1.00**

G. USG FY 19 Utilities GSF Costing

Institution	Maintain Square Footage	Utilities	Utilities CSF
Abraham Baldwin Agricultural College	859,460	$ 1,112,200	$ 1.29
Albany State University	1,359,973	$ 750,000	$ 0.55
Atlanta Metropolitan State College	403,000	$ 665,020	$ 1.65
Augusta University	Excluded		
Clayton State University	647,632	$ 1,634,538	$ 2.52
College of Coastal Georgia	1,355,889	$ 775,000	$ 0.57
Columbus State University	2,603,441	$ 3,218,551	$ 1.24
Dalton State College	487,568	$ 903,704	$ 1.85
East Georgia State College	225,594	$ 654,930	$ 2.90
Fort Valley State University	1,981,341	$ 1,985,000	$ 1.00
Georgia College and State University	1,447,721	$ 1,948,329	$ 1.35
Georgia Gwinnett College	1,593,429	$ 1,750,000	$ 1.10
Georgia Highlands College	661,874	$ 1,357,382	$ 2.05
Georgia Institute of Technology	Excluded		
Georgia Southern University	7,205,968	$ 8,321,337	$ 1.15
Georgia Southwestern State University	900,490	$ 1,211,800	$ 1.35
Georgia State University	Excluded		
Gordon State College	1,132,721	$ 1,000,000	$ 0.88
Kennesaw State University	2,814,780	$ 6,992,678	$ 2.48
Middle Georgia State University	1,652,209	$ 2,645,280	$ 1.60
Savannah State University	687,166	$ 562,630	$ 0.82
South Georgia State College	1,844,300	$ 887,150	$ 0.48
University of Georgia	Excluded		
University of North Georgia	2,959,923	$ 3,291,943	$ 1.11
University of West Georgia	2,794,727	$ 2,187,661	$ 0.78
Valdosta State University	2,722,236	$ 4,163,320	$ 1.53
System Totals	**38,341,442**	**$48,018,453**	**$ 1.25**

H. USG FY 19 Grounds & Landscape Maintenance GSF Costing

Institution	Maintain Acreage	Landscape Grounds Maintenance	Landscape Grounds Maintenance Cost Per Acre	Landscape Grounds Maintenance Cost Per SQFT
Abraham Baldwin Agricultural College	590		$ -	$ -
Albany State University	417	$ 821,857	$ 1,971	$ 0.05
Atlanta Metropolitan State College	67	$ 62,000	$ 925	$ 0.02
Augusta University	Excluded			
Clayton State University	268	$ 688,104	$ 2,568	$ 0.06
College of Coastal Georgia	216	$ 531,291	$ 2,460	$ 0.06
Columbus State University	158	$ 1,655,198	$ 10,476	$ 0.24
Dalton State College	144	$ 138,000	$ 958	$ 0.02
East Georgia State College	100	$ 180,368	$ 1,804	$ 0.04
Fort Valley State University	1,365	$ 328,259	$ 240	$ 0.01
Georgia College and State University	207	$ 1,283,707	$ 6,201	$ 0.14
Georgia Gwinnett College	215	$ 339,362	$ 1,578	$ 0.04
Georgia Highlands College	439	$ 350,955	$ 799	$ 0.02
Georgia Institute of Technology	Excluded			
Georgia Southern University	1,200	$ 1,473,289	$ 1,228	$ 0.03
Georgia Southwestern State University	236	$ 467,258	$ 1,980	$ 0.05
Georgia State University	Excluded			
Gordon State College	162	$ 339,126	$ 2,093	$ 0.05
Kennesaw State University	401	$ 1,501,089	$ 3,743	$ 0.09
Middle Georgia State University	744	$ 859,940	$ 1,157	$ 0.03
Savannah State University	340	$ 446,762	$ 1,314	$ 0.03
South Georgia State College	214	$ 272,262	$ 1,272	$ 0.03
University of Georgia	Excluded			
University of North Georgia	1,039	$ 1,384,387	$ 1,332	$ 0.03
University of West Georgia	673	$ 1,813,042	$ 2,694	$ 0.06
Valdosta State University	405	$ 777,674	$ 1,920	$ 0.04
System Totals	**9,600**	**$15,713,930**	**$ 1,637**	**$ 0.04**

I. USG FY 19 Major Repair & Rehabilitation (MRR) Budget

USG Institutions	Total Request	Total Funded	Total Unfunded
Abraham Baldwin Agricultural College	$ 3,530,000	$ 820,000	$ 2,710,000
Albany State University	$ 2,345,500	$ 1,085,000	$ 1,260,500
Atlanta Metropolitan State College	$ 1,971,500	$ 445,000	$ 1,526,500
Augusta University	Excluded		
Clayton State University	$ 5,313,000	$ 605,000	$ 4,708,000
College of Coastal Georgia	$ 1,130,000	$ 410,000	$ 720,000
Columbus State University	$ 1,745,000	$ 980,000	$ 765,000
Dalton State College	$ 2,000,000	$ 425,000	$ 1,575,000
East Georgia State College	$ 1,216,000	$ 305,000	$ 911,000
Fort Valley State University	$ 3,101,650	$ 1,250,000	$ 1,851,650
Georgia College & State University	$ 6,061,600	$ 1,390,000	$ 4,671,600
Georgia Gwinnett College	$ 2,260,980	$ 325,000	$ 1,935,980
Georgia Highlands College	$ 1,898,000	$ 599,000	$ 1,299,000
Georgia Institute of Technology	Excluded		
Georgia Southern University	$ 9,915,866	$ 2,682,000	$ 7,233,866
Georgia Southwestern State University	$ 2,910,000	$ 815,000	$ 2,095,000
Georgia State University	Excluded		
Gordon State College	$ 1,463,704	$ 492,000	$ 971,704
Kennesaw State University	$ 20,429,550	$ 2,002,000	$ 18,427,550
Middle Georgia State University	$ 6,261,292	$ 1,445,000	$ 4,816,292
Savannah State University	$ 1,664,264	$ 989,000	$ 675,264
South Georgia State College	$ 1,034,217	$ 716,000	$ 318,217
University of Georgia	Excluded		
University of North Georgia	$ 7,350,000	$ 1,100,000	$ 6,250,000
University of West Georgia	$ 7,140,750	$ 920,000	$ 6,220,750
Valdosta State University	$ 13,850,000	$ 1,385,000	$ 12,465,000
System Total	**$ 104,592,873**	**$21,185,000**	**$ 83,407,873**

J. USG FY 19 Institutional Budget with Total Student Enrollment

Institution	Institution Budgets	% of Total Institution Budget	Student FTE	Institution Budget Per FTE	FMO Survey Maintain SQFT	SQFT $ of Institution Budget	FMO Survey M&O Budget	% of Total Institution Budget
Abraham Baldwin Agricultural College	$ 63,055,473	2.05%	4,291	$ 14,695	859,460	$73.37	$3,962,032	6.28%
Albany State University	$ 120,474,182	3.92%	6,371	$ 18,910	1,359,973	$88.59	$3,746,232	3.11%
Atlanta Metropolitan State College	$ 30,782,754	1.00%	2,187	$ 14,075	403,000	$76.38	$1,504,000	4.89%
Augusta University	Excluded							
Clayton State University	$ 99,572,273	3.24%	7,038	$ 14,148	647,632	$153.75	$6,120,446	6.15%
College of Coastal Georgia	$ 44,341,063	1.44%	3,546	$ 12,505	1,355,889	$32.70	$2,986,625	6.74%
Columbus State University	$ 131,120,397	4.27%	8,076	$ 16,236	2,603,441	$50.36	$7,253,022	5.53%
Dalton State College	$ 51,173,951	1.67%	5,118	$ 9,999	487,568	$104.96	$2,986,625	5.84%
East Georgia State College	$ 35,176,363	1.15%	2,942	$ 11,957	225,594	$155.93	$925,630	2.63%
Fort Valley State University	$ 77,941,688	2.54%	2,776	$ 28,077	1,981,341	$39.34	$6,496,091	8.33%
Georgia College and State University	$ 145,022,143	4.72%	6,989	$ 20,750	1,447,721	$100.17	$6,325,837	4.36%
Georgia Gwinnett College	$ 167,320,694	5.45%	12,508	$ 13,377	1,593,429	$105.01	$4,668,288	2.79%
Georgia Highlands College	$ 52,256,610	1.70%	6,184	$ 8,450	661,874	$78.95	$2,395,258	4.58%
Georgia Institute of Technology	Excluded							
Georgia Southern University	$ 473,815,730	15.43%	26,408	$ 17,942	7,205,968	$65.75	$14,770,489	3.12%
Georgia Southwestern State University	$ 50,493,511	1.64%	2,907	$ 17,370	1,132,721	$44.58	$4,570,000	9.05%
Georgia State University	Excluded							
Gordon State College	$ 47,553,449	1.55%	3,663	$ 12,982	900,490	$52.81	$2,374,707	4.99%
Kennesaw State University	$ 566,696,464	18.45%	35,420	$ 15,999	2,814,780	$201.33	$18,529,910	3.27%
Middle Georgia State University	$ 102,294,845	3.33%	7,802	$ 13,111	1,652,209	$61.91	$7,324,856	7.16%
Savannah State University	$ 107,093,413	3.49%	4,077	$ 26,268	1,844,300	$58.07	$4,600,000	4.30%
South Georgia State College	$ 30,317,037	0.99%	2,482	$ 12,215	687,166	$44.12	$2,683,320	8.85%
University of Georgia	Excluded							
University of North Georgia	$ 248,841,332	8.10%	19,722	$ 12,617	2,959,923	$84.07	$17,243,217	6.93%
University of West Georgia	$ 238,913,583	7.78%	13,733	$ 17,397	2,794,727	$85.49	$17,660,178	7.39%
Valdosta State University	$ 187,040,771	6.09%	11,211	$ 16,684	2,722,236	$68.71	$11,957,171	6.39%
System Totals	**$ 3,071,297,726**	**100%**	**195,451**	**$ 15,714**	**38,341,442**	**$80.10**	**$151,083,934**	**4.92%**

K. USG FY 20 Current Replacement Values (CRV)

Institutions	SQFT	Replacement Value	Insured Value	Insured Contents Value
Abraham Baldwin Agricultural College	801,932	$ 148,752,943	$ 157,348,106	$ 19,104,325
Albany State University	1,786,226	$ 445,890,705	$ 710,435,366	$ 54,910,456
Atlanta Metropolitan College	341,222	$ 92,934,840	$ 58,718,335	$ 7,757,789
Augusta University	Excluded			
Clayton State University	717,852	$ 189,842,432	$ 172,014,957	$ 44,086,110
College of Coastal Georgia	433,140	$ 114,988,552	$ 114,988,552	$ 15,126,500
Columbus State University	1,152,452	$ 284,199,809	$ 272,111,142	$ 95,435,261
Dalton State College	481,892	$ 136,674,375	$ 142,421,887	$ 37,242,500
East Georgia College	242,762	$ 73,114,034	$ 60,592,834	$ 8,511,654
Fort Valley State University	2,371,500	$ 183,757,554	$ 176,219,719	$ 53,235,105
Georgia College and State University	2,074,716	$ 246,825,059	$ 287,954,626	$ 65,756,451
Georgia Gwinnett College	604,813	$ 104,374,460	$ 146,665,849	$ 17,350,000
Georgia Highlands College	560,487	$ 91,345,077	$ 161,583,822	$ 17,980,950
Georgia Institute of Technology	Excluded			
Georgia Southern University	4,907,550	$ 1,275,562,369	$ 1,041,116,464	$ 234,745,905
Georgia Southwestern State University	830,598	$ 196,554,659	$ 203,488,838	$ 23,377,102
Georgia State University	Excluded			
Gordon College	539,980	$ 123,240,112	$ 114,803,815	$ 8,460,300
Kennesaw State University	2,988,870	$ 458,890,489	$ 675,649,650	$ 203,538,776
Middle Georgia State University	1,572,934	$ 346,288,010	$ 378,999,936	$ 33,020,185
Savannah State University	1,407,210	$ 229,195,247	$ 244,469,840	$ 31,180,643
South Georgia State College	594,727	$ 78,592,175	$ 86,600,594	$ 6,945,910
University of Georgia	Excluded			
University of North Georgia	1,667,025	$ 375,539,609	$ 403,098,184	$ 20,796,667
University of West Georgia	2,378,264	$ 291,101,107	$ 279,706,690	$ 73,668,733
Valdosta State University	3,515,294	$ 429,298,040	$ 464,994,953	$ 75,831,322
System Totals	**31,971,446**	**$ 5,916,961,656**	**$ 6,353,984,160**	**$1,148,062,644**

L. USG Institution's Approved FY 20 Capital Outlay

Equipment Funds for Previous Projects	
Abraham Baldwin Agricultural College - Carlton Library Renovation and Fine Arts Building	$ 2,100,000
Columbus State University - Schwob Memorial Library Renovation and Addition	$ 600,000
Georgia Southern University - Center for Engineering and Research	$ 5,200,000
Funds Total	**$ 7,900,000**
Construction Funds	
Georgia College and State University - Integrated Science Complex	$ 18,300,000
Georgia State University - Convocation Center ($48,000,000)	Excluded
Kennesaw State University - Academic Learning Center (Kennesaw)	$ 39,500,000
Middle Georgia State University - Academic and Student Success Renovations	$ 10,600,000
University of North Georgia - Lanier Tech Campus Space Rehabilitation and Infrastructure	$ 13,600,000
University of West Georgia - College of Business Building	$ 14,900,000
Funds Total	**$ 96,900,000**
Planning and Design Funds	
Dalton State College - Bandy Gym Student Recreation Renovations	$ 800,000
Georgia Institute of Technology - Expansion of Tech Square - Phase 3 ($4,300,000)	Excluded
University of Georgia - Interdisciplinary STEM Research Building II ($1,600,000)	Excluded
University of North Georgia - College of Business (Dahlonega)	$ 2,300,000
Funds Total	**$ 3,100,000**
Small Capital	
Augusta University - Central Energy Plant Upgrades - Phase 1 (Health Sciences $4,900,000)	Excluded
East Georgia State College - Statesboro Facility	$ 3,900,000
Georgia Southern University - Repurpose and Renovate PAC for Student Services (Armstrong)	$ 5,000,000
Georgia Southwestern State University - Renovate and Repurpose Historic Florrie Chappell Gym	$ 3,000,000
Middle Georgia State University - Aviation Equipment	$ 2,500,000
Savannah State University - Campus Stormwater and Electrical Distribution Infrastructure	$ 4,100,000
University of Georgia - Driftmier Engineering Center Renovations - Phase II ($5,000,000)	Excluded
Funds Total	**$ 18,500,000**
Major Repair and Renovation (MRR Total $50M)	**$ 21,185,000**
System Total	**$ 147,585,000**

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